

Remarks

Currently pending in the application are claims 1-5, 8-11 and 13-15. Claims 1, 8 and 13 have been amended to further define Applicant's invention. Support for the amendments can be found at, for example, page 4, line 34, of the present application. No new matter has been added.

35 U.S.C. § 103(a)

The Examiner rejected claims 1-6, 13 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Das et al. (U.S. Pat. No. 5,922,448) in view of Blykahman (U.S. Pat. No. 5,591,811) and further in view of Zahir et al. (US Pat. No. 4,127,615). The Examiner also rejected claims 8-11 and 15 as being unpatentable over Blykahman in view of Das et al. and Klein et al. (U. S. Pat. No. 6,245,835) and Zahir et al. Applicant traverses these rejections for the following reasons.

Das et al. teaches a resin blend containing a multifunctional phenolic cyanate/phenolic triazine copolymer ("PT resin") in combination with an epoxy resin which, when cured, provides an article having improved thermal and mechanical properties. Das et al. further teaches the blend can also contain a catalyst to increase cure time. Suitable catalysts taught by Das et al. include metal catalysts; nonylphenol; and imidazoles selected from 1-methyl imidazole, 2-ethyl-4-methyl imidazole, 2-phenyl imidazole, and 2-methyl imidazole. Das further teaches that the catalyst may be predissolved in an alkyl phenol solvent before being added to the blend. The amount of catalyst used is taught to be 15-25%, based on the total weight of solution, so that "the total amount of catalyst in the homogeneously blended blend is from 0.06 to about 0.07 percent, based on the total weight of the blend." *See Das et al.* at col. 10, lines 3-6.

The Examiner adds Blykahman to Das et al. for the purpose of teaching the 1-imidazolylmethyl-substituted 2-naphthol compound of the general formula (I). However, neither Das et al. nor Blykahman, alone or together, teach or suggest a composition containing 1-imidazolylmethyl-substituted 2-naphthol compound of the general formula (I) in combination with a phenol selected from the group consisting of 1,4-n-pentylphenol, n-hexylphenol, n-heptylphenol, n-octylphenol, n-decylphenol, and O,O'-diallyl-bisphenol A with a weight ratio of the compound of formula (I) to phenol being from 25:75 to 50:50 as presently claimed.

The Examiner has added the teachings of Zahir et al. for the purpose of teaching a composition containing an epoxy resin, o,o-diallyl-bisphenol A ("DABA") and an imidazole. The Examiner further states one of ordinary skill would have been motivated to combine the DABA of Zahir et al. with the composition of Das et al. for the purpose of improving properties, such as increasing flexural strength as disclosed by Zahir et al. in Table II.

Zahir et al. does teach a composition containing (i) a polymaleimide; (ii) an alkenylphenol (e.g. DABA) and/or an alkenylphenol ether; (iii) an epoxide compound; and optionally (iv) a curing accelerator (e.g. 2-phenyl-imidazole as described in Table I) for the epoxide compound. The compositions of Examples 7-10 in Table I of Zahir et al. do contain 2-phenyl-imidazole and DABA; however, the weight ratio of 2-phenyl-imidazole (amount listed in Table I is in mg) to DABA (amount listed in Table I is in g) is significantly less than 25:75 to 50:50. Thus, Zahir et al. does not teach or suggest combining a 1-imidazolylmethyl-substituted 2-naphthol compound of the general formula (I) with a phenol selected from the group consisting of 1,4-n-pentylphenol, n-

hexylphenol, n-heptylphenol, n-octylphenol, n-decylphenol, and O,O'-diallyl-bisphenol A with a weight ratio of the compound of formula (I) to phenol being from 25:75 to 50:50 as presently claimed.

Moreover, the teachings of Zahir et al. does not provide one of ordinary skill in the art any reasonable expectation that improved properties can be obtained from a composition containing an imidazole and phenol at a weight ratio of 25:75 to 50:50 as presently claimed. In fact, Zahir et al. teaches increasing the weight ratio of imidazole to DABA can cause a decline in desired properties. For example, in Table II of Zahir et al., Example 7 contained imidazole and DABA at weight ratio of 0.0025:190.5 which is much lower than that of Example 10 which contained imidazole and DABA at weight ratio of 0.07:128.2. However, Example 7 exhibited a flexural strength of 129.8 N/mm² which is higher than that exhibited by Example 10 of 118.7 N/mm².

Nevertheless, Applicant has surprisingly found 1-imidazolylmethyl-substituted 2-naphthol compounds of the general formula (I) in combination with 1,4-n-pentylphenol, n-hexylphenol, n-heptylphenol, n-octylphenol, n-decylphenol, or O,O'-diallyl-bisphenol A, at a weight ratio of the compound of formula (I) to phenol being from 25:75 to 50:50, accelerates the curing of epoxy resin systems at low temperatures and provides cured articles having higher than expected interlaminar shear strength. In particular, the claimed combination of the present invention is able to cure an epoxy resin system at temperatures between 60°-75°C (rather than temperatures greater than 100°C generally taught) to provide cured articles having interlaminar shear strength values up to 50 MPa. *See present application* at Table 2, page 8. The Applicant found this both surprising and unexpected.

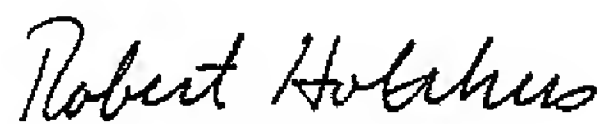
In view of the remarks above, Applicant respectfully requests the rejection of claims 1-6, 13 and 14 under 35 U.S.C. § 103(a) based on Das et al. in view of Blykahman and further in view of Zahir et al. be withdrawn. Additionally, since claim 1 is nonobvious, all claims depending on claim 1 are also nonobvious. Accordingly, Applicant respectfully requests the rejection of dependent claims 8-11 and 15 based on Blykahman in view of Das et al. and Klein et al. also be withdrawn.

Conclusion

It is respectfully submitted that claims 1-6, 8-11 and 13-15 are patentable and are in a condition for allowance. Applicant respectfully requests all pending claims be allowed and that the application pass to issuance.

Respectfully Submitted,

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